F·A·A·M facility for airborne atmospheric measurements

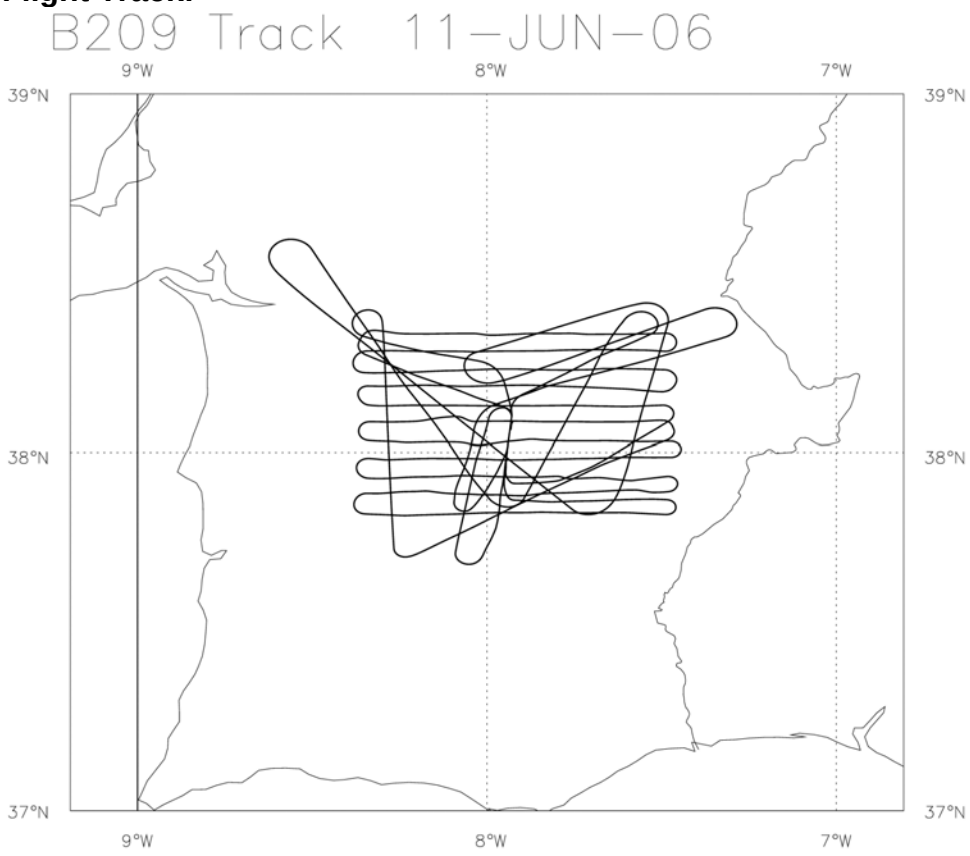
FLIGHT FOLDER

Flight No.:	B209
Date:	11th June 2006
Take Off	09:58:37
Landing:	14:57:36
Flight Time	4h58m59

Campaign: Land Emissivity
Trials Instructions:
Operating Area: Beja Local Area

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Ian Ramsay-Rae	Directflight
3	CCM	Dawn Quinn	Directflight
4	Mission Scientist	Martin Glew	Met Office
5	Flight Manager	Maureen Smith	FAAM
6	CVI	Jeff Brown	Met Office
7	Core Chemistry	Kate Turnbull	FAAM
8	Cloud Physics/AVAPS/CCM2	Paul James	FAAM
9	SWS	Ian Rule	Met Office
10	CCN	Bruce Giddings	Met Office
11	Filters 1	Doug Anderson	FAAM
12	ARIES	Joss Kent	Met Office
13	MARSS	James Bowles	Met Office
14	Wet Neph / PSAP	Andy Wilson	Met Office
15	VPRACOP 1/Radon	Fernando Carvalho	Instituo Tecnologie de Nulcear
16	VPRACOP 2/Filters 2	Joao Oliveira	Instituo Tecnologie de Nulcear
17	Ops Training	Zita Morris	Directflight
18			
19			
20			

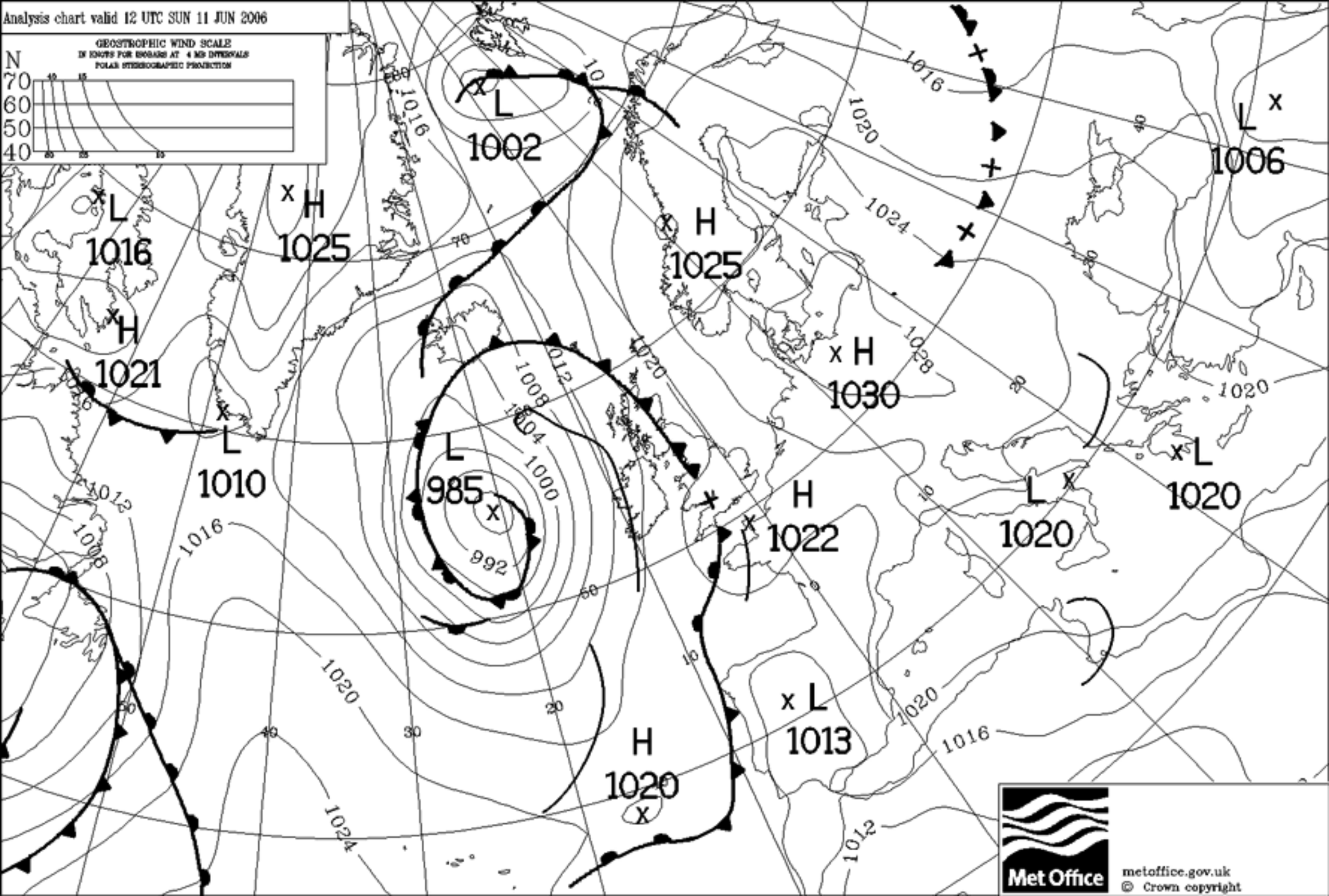
Flight Track:



FLIGHT SUMMARY

Flight No b209
Date: 11 Jun 2006
Project: Land Emissivity
Location: Beja Local Area

Start Time	End Time	Event	Height (s)	Hdg	Comments
090740		Start-Up	0.52 kft	104	38'05.13N, 7'55.65W
093353		INU	0.52 kft	104	Set to Navigate
095837		T/O	1.00 kft	357	Beja
100826		Video	5.5 kft	026	Start UFC & DFC
100931	101635	Profile 1	5.4 - 0.58 kft	019	5k-50',Q1016,500fpm
101635	101940	Profile 2	0.58 - 1.4 kft	005	500fpm
102513	103536	Run 1.1	1.6 kft	095	1.7k', LE1-LE2
103702	104731	Run 1.2	1.6 kft	270	LE3 to LE4
104911	105957	Run 1.3	1.7 - 1.6 kft	092	LE5 to LE6
105634		Heimann	1.7 kft	088	Cal 30-40C
110133	111159	Run 2.1	1.1 - 1.0 kft	270	1200', LE7 to LE8
111005		Heimann	1.1 kft	271	Cal 30-40C
111326	112412	Run 2.2	1.0 - 1.1 kft	097	1100' LE9 to LE10
112052		Heimann	1.1 kft	092	Cal 30-40C
112542	112704	Profile 3	1.1 - 2.5 kft	234	1.1k-2.5k'
113307		Video	1.9 kft	003	Change tapes
113318	113610	Profile 4	2.4 - 0.60 kft	003	2.5k-50', ovhd Beja
113610	114412	Profile 5	0.60 - 8.0 kft	005	1000fpm
114639	115637	Run 3	8.0 kft	172	Above BL
115803	120743	Profile 6	8.0 - 1.0 kft	063	to 1.1k',Q1016
120933	122024	Run 4.1	1.00 - 1.0 kft	270	LE11 to LE12
121748		Heimann	1.0 kft	261	Cal 30-40C
122149	123302	Run 4.2	1.00 - 1.1 kft	098	LE13 to LE14
123028		Heimann	1.1 kft	089	Cal 30-40C
123451	124550	Run 4.3	1.1 - 1.0 kft	269	LE15 to LE16
124535		Heimann	0.99 kft	278	Cal 30-40C
124722	125831	Run 4.4	1.0 - 1.2 kft	093	LE17 to LE18
125721		Heimann	1.1 kft	088	Cal 30-40C
130006	131107	Run 4.5	1.0 - 1.1 kft	265	LE19 to LE20, Q1015
130258		Video	1.1 kft	266	Change Tapes
131043		Heimann	1.0 kft	266	Cal 30-40C
131243	132359	Run 4.6	1.0 - 1.2 kft	093	LE21 to LE22,
132519	132643	Profile 7	1.2 - 2.4 kft	272	1.1k-2.5k', 500fpm
133304	133636	Profile 8	2.5 - 0.63 kft	005	2.5k-50' ovhd Beja
133637	134350	Profile 9	0.63 - 8.0 kft	006	From 50' ovhd Beja
134615	135358	Profile 9	8.0 - 16.0 kft	211	
135806	140459	Profile 9	16.0 - 24.0 kft	328	
141115	141821	Run 5.1	24.0 kft	140	
141234		Sonde	24.0 kft	140	Launch #01, on RFC
142001	142508	Run 5.2	24.0 kft	017	Down Sun
142644	143145	Run 5.3	24.0 kft	252	Into Sun
143404	143904	Run 5.4	24.0 kft	071	Down Sun
144124	144623	Run 5.5	24.0 kft	248	Into Sun
145736		Land	0.60 kft	012	Beja
150154		Shutdown	0.60 kft	095	38'05.13N, 7'55.65W


Analysis chart valid 12 UTC SUN 11 JUN 2006
GEOSTROPHIC WIND SCALE
IN KNOTS FOR 1000MB AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
L 1016
H 1025
L 1002
H 1025
L 1006
H 1021
L 1010
L 985
H 1030
L 1020
H 1022
L 1020
H 1020
L 1013
1016
1020
1024
1028
1012
1008
1004
1000
992
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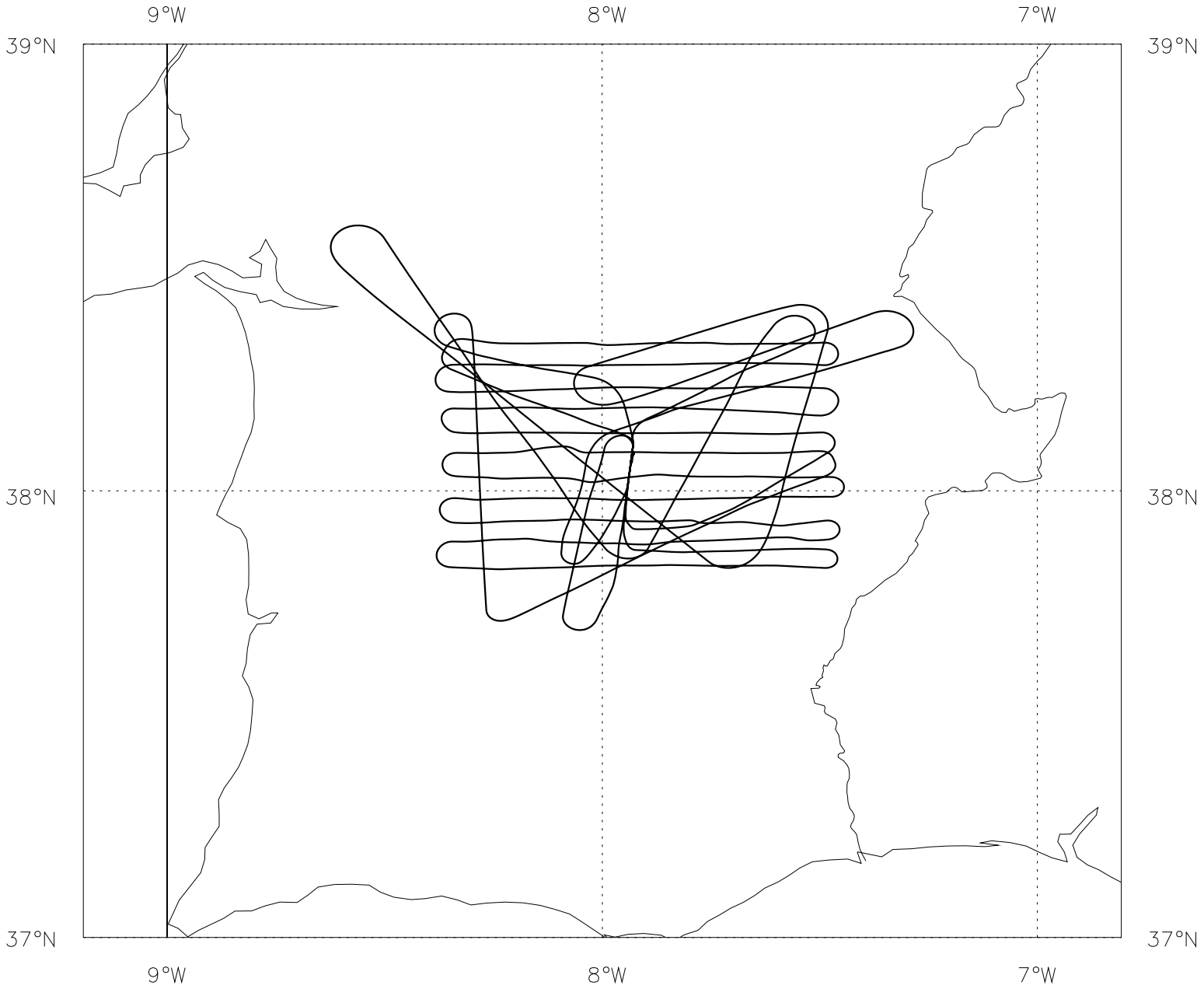
B209 Track 11-JUN-06



B209 LAND EMISS SORTIE BRIEF: June 11th 2006
(Portugal)

1 1100L Take off and climb to 5000ft for instrument switching.
2 1105L Profile descent and approach to Beja down to 50ft.
3 1115L Profile climb to 500ft and transit to start point LE1.
4 1125L Start mapping LE1 to LE2……..
5 1230L At LE10 position for approach to Beja with profile descent to 50ft.
6 1242L Climb 5000ft for comfort break!
7 1252L Perform S+L run LE11-LE10 above boundary layer (est. at FL100) for radiation measurements for AEROPOR
8 1305L Resume mapping at 500ft LE10-LE11
9 1425L At LE22 position for approach to Beja with profile descent to 50ft.
10 1440L Profile ascent to FL240 to nearest corner, interrupting and flying to mid point of opposite side, interrupting and creating a "V".
11 1510L Fly "V" in reverse at FL240. Drop sonde on first leg.
12 1525L Fly 5 min into sun run at FL240 followed by 5 min down sun run, for SWS calibration
13 1540L Transit to Beja
14 1600L Land

Points for **L**and **E**miss—this is how we will refer to them:

LE	1	38.20N 8.20W
	2	38.20N 7.30W
	3	38.17N 7.30W
	4	38.17N 8.20W
	5	38.14N 8.20W
	6	38.14N 7.30W
	7	38.11N 7.30W
	8	38.11N 8.20W
	9	38.08N 8.20W
	10	38.08N 7.30W
	11	38.05N 7.30W
	12	38.05N 8.20W
	13	38.02N 8.20W
	14	38.02N 7.30W
	15	37.59N 7.30W
	16	37.59N 8.20W
	17	37.56N 8.20W
	18	37.56N 7.30W
	19	37.53N 7.30W
	20	37.53N 8.20W
	21	37.50N 8.20W
	22	37.50N 7.30W

MID point of **N**orterly leg		**MIDN**	38.20N 7.55W
MID point of **S**outherly leg		**MIDS**	37.50N 7.55W

Mission Scientist debrief

B209 11th June 2006
Land Emissivity and Aerosols & clear skies (AEROPOR/VPRACOP) **flight over Beja, Portugal.**
Mission Scientist: Martin Glew

Weather Conditions:

Some Cirrus was observed to the south and east of the operating area, but the Land Emiss mapping area was free of high cloud. Shallow Cu developed during the day, never more than 1/8.

Land Surface:

The mapping area was a rectangle bounded by the latitudes 37deg 50min N, 38deg.20min N and the longitudes 7deg 30min W, 8deg 20min W. The land surface was about 50% corn. Other common types: Olive trees, Cork trees, green irrigated fields, vineyards, hills with sparse shrubs, lakes and rivers. Sometimes the red underlying soil could be seen in the fields. The flight track avoided towns and villages. The area is relatively flat, allowing for flying at FL011 (approx 500 agl) though hills in the north of the area meant flying at FL017 at the start of the sortie.

Sortie:

On take off from Beja at 095912z the aircraft ascended to 5500ft and positioned for a profile and missed approach to the airfield with gear down followed by a profile ascent to 2000ft. The aircraft then transited to the north west corner of the mapping area and began mapping runs orientated west-east at FL017, displacing 3 deg south at the end of each run. After 3 runs we profiled down to FL011 over flatter ground for the next 2 runs. During the second of these we saw a narrow dust devil sending dust about 300ft into the air.

We then profiled up to FL025 and positioned for a missed approach to Beja airfield followed by a profile ascent to FL080, above the boundary layer. There was a small inversion at 850mb with the main inversion and hydrolapse at 800mb. We then made a south-north run over the mapping area with the radiometers looking down for AEROPOR work and for filter and Radon sampling for the VPRACOP project. We then profiled down to FL011 and recommencing the regular mapping pattern from 38deg 5min N 7deg 30min W with another 6 mapping runs, finishing mapping at 132359. Though some small Cu developed as the sortie progressed they were very sparse and all mapping runs were free of cloud.

The aircraft then profiled to FL025 and positioned for a profile and missed approach to Beja followed by a profile ascent to FL240, interrupting to keep position largely within the mapping area. There was a slight inversion at 800mb with the main inversion at 750mb. There was no sign of pollution above the inversion. Two runs were made at FL240 over the mapping area with a sonde successfully dropped on the 1st run. The north of the area had 1/8 shallow Cu, with smaller amounts to the south. We then performed 3 5 min runs at the same altitude, orientated into, down, into sun for SWS calibration. This period at FL240 also enabled the VPRACOP group to obtain a Radon sample which complemented their work from the previous flight. This ended the science at 144623z and we recovered to Beja, landing at 1459z.

Success of flight:
The land emiss part of the flight was a success. The VPRACOP group got filter samples during the land emiss mapping and at FL080 and FL240. The AEROPOR work at FL080 was hampered by the SWS vis module failing during that run

Instrument status:

SWS: The VIS and NIR module dropped out briefly at times during the flight.
SHIMS: OK
ARIES: Fell over a couple of times briefly during the first part of the low level mapping.
MARSS: All channels showing occasional spikes. Mirror bearings showing signs of wear.
Wetneph: OK
Cloud Physics: PCASP kept dropping out and coming back.
Core chemistry: Problems with CO and Ozone.
CVI: ok
CCN: base voltage level kept creeping up till instrument was unusable. Fixed while at high level.
Filters: ok

Aircraft Scientist's Log

M. GLEW

Flight No B209 Date 11/06/2006 Page 1 of .....

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GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
1002	On ground,	tr	Ci to	N,	/ contrail to SE
Hazy.	No	boundary	layer	cloud.	
095912	T/O	pos	Hazy to S		
1005	positioning.	Cirrus	S+E to	Est vis to ground	
60 km	at	5500'			
100931	P1	5500'	11°	Small Inversion 3.2	870 mb
101635	P2	50' ↑	6°	to 1500'. 1021 cirrus to N	
102513	R1.1	1700'	90°	1 → 2	
Clear of cloud.		Woody terrain mainly		1029 pictures taken	
1032	Hillier.	103	3 pictures. Clear of cloud		
103536	R1.1 end	1700'	90°	Clear of cloud that run	
103702	R1.2			3 → 4 Clear ahead.	
1041	pictures.	104155	small lake.	1044 pictures	
104620	small	Lake.	Woody this end.		
104731	R1.2 end	1700'	4	Clear of cloud that run.	
104911	R1.3	1700'	90°	Pictures at start 5 – 6	
1051	more	fields	here.	1055 dense green vineyards.	
105632	end	and hills	105732	Ci ahead but OK	mapping.
105957	R1.3	1700'	cloud free	that run. Pictures	
at end.					
110133	R2.1	1100'	270		7 – 8 Clear of cloud.
T/O3	SWS	cracked.	pollution	on neph same as	
at 1700'.	1105	pictures,	flat crops,	can see	
red soil.	110920	PCASP	on 20	Crash.	1110 woodyer
111030	Pictures	+ SWS	back		

Aircraft Scientist's Log

M. GLEW

Flight No B209 Date 11/06/2006

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
111159	R2.1 end	1100'	270		cloud free that run
111326	R2.2	1100'			9—10
1114	bare soil	to Right			111550 pictures of sand dune
11[18]20	mainly arable, some trees, some road 112 woods				
112740	over small lake. 1128 treed bare soil				
112812	R2.2 end				cloud free that run, Cu & E+S
1125	great dust devil narrow.				
112542	P3	1100' ↑	to 2500' at 112704.		
113318	P4	2500 ↓	end		113610
113610	R5	50' ↑	to FL100		
1142	little inversion at 850mb.				
114412	R5 end	FL080	main inversion was 800mb.		
114639	R3	FL080	172		
115637	R3 End	FL080			Tr Cu to south + some Ci but
Ci reduced from this morning					
115803	P6 ↓	FL080	060		1157 SAS Vis track.
1205	PCASP	back by ASEB.			
120743	P6 end	1100'			
120933	R4.1	1100'			11—12
1210	PCASP	dead. 1211 pictures, red on brass.			
1213	Tr Cu from to north 1215 pictures.				
1215	manouvering round green trees? 121820 picture				
of red soil.					
122024	R4.1 end	1100'	cloud free,		1 Cu from to S
122149	4.2				13 14

Aircraft Scientist's Log

Flight No B209 Date 11/06/2006 Page 3 of .....

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GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
1224	pictures			122644	picture Cornland, Start.
1229	CCN		C/S	same	120° 12345 pictures.
123302	End R42	1100'	098	Cloud free, tr. Culture ahead	
overhead + some			Cirrus ahead.		
123431	R43	1100'	Pictures		1237 15–16
1240	pictures.		17	41.10	Tr Culture & S
1243	pictures.			124500	dust devil ahead.
124550	End R43	1100'	279	Cloud	free, tr Culture & S
124722	R44	1100'	093	flat here, 500' var +/-	1245
125045	small	lake		125215	pictures farmland.
125440	Start	wriggle.			
125831	End R44	1100'	093	Cir to	STE, Tr Culture to N,
another	cloud	free	run.		
130006	R45	1100'	265		19–20
Wooded	here +	hilly.		1302	pictures.
1304	Culture	to	Left,	Culture	to right. 1305 pictures
1309	more	same	like	here.	
131107	End R45	1100'	265	Cloud	free.
131243	R46	1100'	090		21–22
131505	pictures,	farmland.			131551 wood below
1318	Pictures.				131601 end wood.
1320	Tr Culture,		Cirrus		TS + E seems smoke coming from slags.
132100	CCI	pass		cone	1500 ft was 900 earlier.
132000	Neph	peak.		1322	pictures. Scrub wood.
132354	End R46	1100'		Cloud	free all through.

Aircraft Scientist's Log

Flight No B209 Date 11/06/2006 Page 4 of .....

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GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
132519	P7	1100' ↑		end	132643 at 2500'
133304	P8	2506' ↓	008	ending at 50' over Boja airfield	
133542	dust devil to Left				
133857	P9↑	50'	134	0 across to E	
134350	P9 interrupt	FL080.		Cu to E, est tops below is.	
Slight	inversion	800	mb,	pollution dropped away.	
134605	P9↑	FL080↑	21	Main hydrolapse at 750 mb, Temp	
Following W/L	above.	1/8	Cu	base at South of mapping area.	
135358	P9 interrupt	FL160			
135806	P9↑	FL160	1/8	Cu to	N+W, near point LE13
140459	P9 end	FL240	To ⇔ 1/8	Cu hum below, Cu to S+E	
141150	RS.1	FL240	140		
141234	Sonde 1		looking good. Poorly Developed Cu.		
141821	END RS.1	FL240			
142001	RS.2	FL240	005	1/8	Cu hum below, perhaps Ca Con over sea.
142844	RS.3	FL240	250	Into	Sun.
143145	END RS.3	FL240	250		
143404	RS.4	FL240	71	Down	Sun. 1/8 Cu Hum below.
143904	END RS.4	FL240	71		
144124	RS.5	FL240		END	Sun. PCASP 20 per cc.
144623	END RS.5	FL240		END	SCIENCE.

CORE CHEMISTRY FLIGHT LOG FOR FLIGHT FOLDER

Flight Number : B209
Date : 11/06/06
Operator and contact info : Kate Turnbull katet@faam.ac.uk

Problems with Instruments

CO	**Background ppbV became very high above FL150, resulting in unreliable data, especially during profile descent after calibration at FL240.**
O_3	**None**
NO_x	**No flow through Ozonator at FL150 and above therefore only NO channel available (no NO_2 or NO_x measurements). Flow did not recover on descent until FL100.**
SO_2	**N/A**
TDLAS	**N/A**
WAS	**N/A**

CLOUD PHYSICS LOG Flight B209

Date: 11/6//06	Operator: papj	DRS Time: 07:35:00	DAU1 Time: 0	DAU2 Time: +0	DAU3 Time: 0	Aux1 Time: +0	Aux2 Time: +0	Page 1 of 1

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
100926	950	0.09		10	3												P1
101237	900	0.09		10	3												030
101530	1000	0.09		10	3												010
102513	900	0.09		10	3												R1.1
1028	900	0.09		10	3												
1032	900	0.09		10	3												
103536	900	0.09		10	3												End r 1.1
103702	900	0.09		10	3												Start 1.2
1040	900	0.09		10	3												
1044	900	0.09		8	3												
104731	900	0.09		8	3												End 1.2
104911	900	0.09		8	3												Start 1.3
1052	900	0.09		8	3												
1055	900	0.09		8	3												
105957	900	0.09		8	3												End 1.3
110133	900	0.09		8	3												Start 2.1
1105	900	0.09		8	3												
1117	900	0.09		8	3												Pcasp Vref = 0
1122	900	0.09		8	3												
112412	900	0.09		8	3												End 2.1
	900	0.09		8	3												
115803																	
120130				10	3												
1205	1200	0.09		10	3												Pcasp back up
120743	1200	0.09		10	3												
1212																	Pcasp vref 0
1215				10	1												
1218				10	1												
122024																	End run 4.1
122149				10	1												Start run 4.2
1225				10	1												
1230				10	1												
123302																	End 4.2
123451				8	1												Start 4.3
1238				8	1												
1242				8	1												
124550				8	1												End 4.3
124722				8	1												Start run 4.4
1253				8	1												
125831				8	1												End run 4.1
130006				8	1												Start run 4.5
1305					1												
131107																	

CLOUD PHYSICS LOG Flight B209

Date: 11/6//06	Operator: papj	DRS Time: 07:35:00	DAU1 Time: 0	DAU2 Time: +0	DAU3 Time: 0	Aux1 Time: +0	Aux2 Time: +0	Page 2 of 2

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		

FLIGHT NUMBER: B (207)	DATE: 11/06/06	OPERATOR: B. GIDDINGS	Page 1 of 4
PROJECT: 209 CAPE			

CCN LOG

Tb

ALLEVIATOR GMT ON	ALLEVIATOR GMT OFF	HEIGHT & Tt	TEMP INLET	STATIC 1	2	3	4	5		REMARKS
				1.75	2.5	3.5	4.25	5.5		
		500'								
~~10:25:13~~	~~10~~	24.56	22.31	0.17	0.31	0.49	0.72		S	Run 1.1
10:25:13	10:25:54	24.71	~~373~~ 21.73	373	599	908		1880	D	
		24.85	~~364~~ 21.73	364	368	365	?	559	B	Fault on base?
		24.87	21.69 ~~2514~~	2312	2362	2351			R	
		24.85	20.33 ~~994.5~~	994.5	994.5	994.5			P	
10:37:36		25.08	22.31	~~0.17~~ 524	0.31	0.49	0.71	1.07	S	Run 1.2
		25.10	22.06	524	699	1480	1545	2415	D	
		25.25	21.35	394	392	400	421	637	B	
		25.28	20.75	2415	2405	2381	2380	2385	R	cord 4
		25.25	19.74	994.5	994.5	994	994.1	994.5	P	
				1.75	2.5	3.5	4.25	5.5		
10:49:30	10:50:11	25.42	23.10	0.17	0.31	0.49	0.70	1.06	S	
		25.53	22.45	478	580	1304	1316	2269	D	
		25.55	21.80	386	365	377	415	546	B	
		25.58	21.06	2386	2353	2347	2354	2350	R	
10:55			20.02	994.6	994.8	994.7	994.6	994.6	P	
		11:00'								
10:59		25.82	23.52	0.17	0.31	0.48	0.70	1.05	S	Run 2.1
11:01:33	11:02:10	25.88	22.82	508	861	1156	1725	2651	D	
		25.86	22.01	357	366	384	466	723	B	
		25.88	21.33	2363	2370	2390	2406	2468	R	
		25.85	20.39	994.8	994.8	994.6	994.8	994.6	P	
				1.75	2.5	3.5	4.25	5.5		

430

209 2

FLIGHT NUMBER: B	DATE: 11/06/06	OPERATOR: B. GIDDINGS	Page ~~1 of 2~~
PROJECT: CAPEX			

CCN LOG

T6

ALLEVIATOR GMT ON	ALLEVIATOR GMT OFF	HEIGHT ↑ T6	TEMP INLET	STATIC 1	2	3	4	5		REMARKS
		11000'		1.75	2.5	3.5	4.25	5.5		50 Run
11:13:26	11:14:04	26.15	25.87	0.17	0.30	0.48	0.70	1.05	S	2.2
		26.17	23.18	699	1016	1561	1850	2405	D	
		26.15	22.47	387	378	389	426	671	B	
		26.20	21.70	2440	2449	2454	2459	2468	R	
11:20:05		26.23	20.64	994.6	994.8	994.6	994.6	994.8	P	
		11000'								
12:09:33	12:10:05	27.76	25.47	0.16	0.29				S	50 Run 4.1
		27.67	24.62	401					D	LE11 - LE12
				527					B	Aborted - base → 2080
				2457					R	Need to
				994.8					P	turn pot @ altitude
		24000'		1.75	2.5	3.5	4.25	5.5		
~~13:07:30~~	~~13:08~~	25.01	22.91	0.18	0.32	0.50	0.72	1.08	S	
14:11:15	14:12:50	24.92	21.86	186	237	338	218	450	D	Run 5.1
		24.97	21.07	264	318	307	342	347	B	Trimpot
		24.97	20.29	2281	2285	2284	2285	2286	R	adjusted & reduce
		24.94	19.27	865.8	865.7	865.8	865.8	866.1	P	'B' value
		24000'								
14:20:01	14:20:34	25.06	22.73	0.18	0.32	0.50	0.73	1.09	S	5.2
		24.77	21.62	213	235	216	274	349	D	
		24.83	20.80	280	304	304	309	318	B	ear
		24.75	20.01	2298	2306	2310	2318	2326	R	
		24.7	19.26	866.0	866.2	866.0	866.0	865.7	P	
				1.75	2.5	3.5	4.25	5.5		

209

FLIGHT NUMBER: B	DATE: 11/06/06	OPERATOR: B. GIDDINGS	Page 1 of 2
PROJECT: COPEX.			

CCN LOG

ALLEVIATOR GMT ON	ALLEVIATOR GMT OFF	HEIGHT ~~24000'~~	TEMP INLET ~~T6~~	STATIC 1	2	3	4	5		REMARKS
				1.75	2.5	3.5	4.25	5.5		
14 28 00	14 28 50	24·74	22·39	0·18	0·52	0·50	0·73	1·10	S	Run 5·3
		24·46	21·38	221	218	289	342	334	D	into
		24·37	20·57	299	318	324	327	326	B	5·4
		24·36	19·7	2357	2388	2377	2387	2397	R	(base height)
		24	18·69	866·2	866·2	865·7	865·6	865·7	P	
		24000'								
~~14 37 18~~	~~14 37 50~~	24·40	22·03	0·18	0·32	0·51			S	~~Run 5·4~~
		24·26	21·08	242	241	241			D	Run 5·5
14 41 24	14 41 58	24·27	20·22	290	306	305			B	
		~~24~~	~~19~~	2411	2410	2400			R	ear 23
				8659	866·0	865·1			P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		

FAAM Dropsonde Flight Log

Flight No.	B209	Date	11/6/06
Page No.	1 of 1	Operator	papj

GMT	**Sonde No.**	**Event**	**Comments**
		e.g. launch, splashdown	*e.g. wind data? PTH data? Lat/Long* *NB strings of dropsonde data contain:* *time, pressure hPa, T deg C, RH %, wind direction deg, wind speed m/s, longitude, latitude, height m*
150647	1	launch	150647.2 9999.00 99.00 999.00 999.00 999.00 999.00 -8.21629 38.19817
152151	1	Hit the deck	152151.8 1002.99 32.17 29.46 135.00 0.04 -0.21 -8.19704 38.21905

P.S.A.P. Log

Flight No. **B**.209..... Date .11/06/06..... Page ..1 of .1.....

GMT	Filter Trans.	Flow Rate	B_a x 10^{-6}	Ph_det levels		Run	Remarks
Set to DRS time	New filter Tr = 1.000	Set to 3.0 lpm				(30s) ? Ave = s	←Preflight
090000	1	3	4.2	20	45	30	preflight ok
095940	1	3	5.4	20	44	30	Take off
100300	1	3					data start
131700	0.806	3	2.8	16	44	30	
141100	0.795	2.76	0	15	44	30	FL240
150500	0.778			15	44	30	DATA STOP

Filter Sampling Log

Flight No: B209 **Date:** 11 Jun 2006 **Operator:** Joao / Doug

Type of filters mounted in	Top inlet	90mm diameter type P	Bottom inlet	90mm diameter type P

Run No	Disk #1 TOP	Disk #2 MIDDLE	Disk #3 BOTTOM	Inlet Top/ Bottom	Time On (Z)	Time Off (Z)	Flight Run	Accum Vol [l]	Comments
Filters run1	P26	-	-	Top	10:25:13	10:47:31	R1.1/2	1992	After removing the upper filter was wet Lower inlet flow rate initially 4x higher than upper. After about 2 mins upper flow rate increased and ratio by end of R1.1 was a more normal 2x. After removing the lower filter was uneven but dry though had a puncture hole. Flows @ end R1.1 top: 977, bottom: 2038 Flows @ start R1.2 top: 1003, bottom: 2295
Filters run1	P27	-	-	Bottom	10:25:13	10:47:31	R1.1/2	3927	
Filters run 2	P29	-	-	Top	10:49:11	11:24:12	R1.3 & R2.1/2	3783	Alt itude reduced from 1200’ to 1100' in turn between R1.3 and R2.1
Filters run 2	P30	-	-	Bottom	10:49:11	11:24:12	R1.3 & R2.1/2	3351	
Filters run 3	P31	-	-	Top	11:44:12	11:08:53	R3 + turn	718	FL080
Filters run 3	P32	-	-	Bottom	11:44:12	11:08:53	R3 + turn	1060	
Filters run 4	P33	-	-	Top	12:09:33	12:45:50	R4.1/2/3	3132	1100’ R4.1 between LE11 & LE12 R4.2 between LE12 & LE13 R4.3 between LE13 & LE14
Filters run 4	P34	-	-	Bottom	12:09:33	12:45:50	R4.1/2/3	3877	
Filters run 5	P35	-	-	Top	12:47:22	13:23:59	R4.4/5/6	3000	1100’
Filters run 5	P36	-	-	Bottom	12:47:22	13:23:59	R4.4/5/6	3224	
Filters run 6	P37	-	-	Top	14:05:35	14:39:04	R5.1/2/3 /4	570	
Filters run 6	P38	-	-	Bottom			R5.1/2/3 /4	2341	Lower Filter approx 1/3 loose from O ring which explains difference in flow rate

Glow2 x2=30'

ARIES flight log

Flight: B209 | Location: Beja, Portugal | page 1 of 6

Date: 4/6/06 | Operator(s): Joss/Kevin | Resolution: 2 | Gain A: 2 | B:

Notes: WIND EFUSSIVITY. — the 500' nightmare.

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
Ser	CBB to	40°C,	wont	settle	on	anything	lower.			
1015	— Scan	~~rate~~	rate	now	@ 60	scans/	min.	Servo	240scans/min.	
102304	~~Run 1~~ Transit	B209G	Clsd	71.0	41.3	27.0	+90.6	31.9	CH1 x2	
102526	Run1-1	B209H	Clsd						Glow1 x8	2 mins.
102739	Run1-1	B209I	Clsd						Glow1 x8	2 mins
102940	Run1-1	B209J	Open						Z1 x2	1 min.
103053	Run1-1	B209K	Clsd	71.0	41.3	28.6	+90.6	32.3	~~CH1 x2~~ CH1 x2	~~Test~~.
103314	Run1-1	B209L	Clsd						Glow1 x8	
103408	Run1-1	B209M	Clsd						Glow1 x8	Fell over @ end
103734	Run1-2	B209N	Clsd	71.1	40.7	29.3	+90.6	33.1	CH1x2	Started in run.
103947	Run1-2	B209O	Clsd						Glow1 x8	
104045	" "	B209P	Clsd						Glow1 x8	
104243	" "	B209Q	Clsd						Glow1 x8	
104439	" "	B209R	Clsd	71.0	38.5	30.0	+90.6	33.3	CH1 x2	
104554	" "	B209S	open						Z1 x2	
104708	" "	B209T	~~Clsd~~	open					Glow1 x8	End of run clipped last few scans.
104813	end Run1-2	B209U	Clsd	70.9	39.9	29.6	+90.6	33.4	CH1 x2	
104930	Run1-3	B209V							Glow1 x8	Fell over at end

ARIES flight log

Flight: B209 | Location: Baja Portugal | page 2 of 6

Date: 11/05/05 | Operator(s): Joss | Resolution: 2 | Gain A: 2 B: 2

Notes: On 2 cm⁻¹

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
105211	Raster	B209W	Clsd						Glow1 x 8	
105411	" "	B209X	Clsd						Glow1 x 8	Emo
105515	" "	B209Y	Clsd						Glow1 x 4	s
105616	" "	B209Z	Clsd						Glow1 x 4	
105722	" "	B209[illegible]	Clsd						CH1 x2.	
104818	" "	B2091	open	70.2	36.8	30.1	-190.6	34.6	Z1 x2.	
	" "	B2092	Clsd						Glow1 x2 — oops - Glow2	
110131	twin	B2093	Clsd	70.8	36.9	30.4	-190.6	34.2	CH1 x2	
110241	R2-1	B2094	Clsd						Glow1 x 4	Fell over in scan
110334	R2-1	B2095	Clsd						Glow1 x 8	
110746	R2-1	B2096	Clsd						Glow1 x 8	
110943	R2-1	B2097	Clsd	71.1	37.5	31.6	-190.6	35.0	CH1 x2	
111053	R2-1	B2098	open						Z1 x2	
111243	twin	B2099	Clsd	71.1	37.6	31.6	-190.6	34.9	CH1x2	reset software in room
111417	R2-2	C209A	Clsd						Glow1x8	
111606	R2-2	C209B	Clsd						Glow1 x8	
111805	R2-2	C209C	Clsd						Glow1x8	
112001	" "	C209D	Clsd	70.9	37.4	31.6	-190.6	35.5	CH1 x1	
112050	" "	C209E	open						Z1 x2	
112212	" "	C209F	Clsd	71.2	37.4	32.3	-190		CH1 x2	
112344	" "	C209G	Clsd						Glow1 x2	

ARIES flight log

Flight: B29 | Location: Beja Portugal | page 3 of 6

Date: 11/06/06 | Operator(s): Joss. | Resolution: 2 | Gain A: 2 B: 2

Notes: Restarting software & start of each run to stop it falling over

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
114430	R3	B209H	Cld	70.6	37.4	30.2	-190.6	37.5	GH1.	Straightened from 114640.
114545	R3	C209I	Cld						Glew5 x 8	oops, now straighter level yet.
114742	R3	C209J	Cld						Glew5 x 8	
114937	R3	C209K	Cld						Glew3 x 8	
115136	R3	C209L	Cld	70.7	35.4	25.9	-190.6	35.1	CH1x2.	
115250	R3	C209M	Open						H1 x2.	
115402	R3	C209N	Cld						Glew3 x 8	
115642	R3	C209O	Cld	71.0	34.0	23.4	-190.6	33.7	CH1x2	
120914	R4 start	C209P	Cld	71.2	31.2	24.3	-190.6	35.1	CH1x2	
120931	R4.1	C209Q	Cld						Glew5 x8	
121136	R4.1	C209R	Cld						Glew5 x8	
121330	R4.1	C209S	Cld						Glew5 x 8	
121529	"	C209T	Cld	71.0	31.6	28.8	-190.6	34.9	CH1x2	
121653	"	C209U	Open						H1 x2.	manoeuvring & start.
121806	"	C209V	Cld						Glew5 x 6.	
121940	"	C209W	Cld	71.0	33.1	30.7	-190.6	35.2	CH1 x2	
122142	R4.2	C209X	Cld						Glew5 x 8	
122353	"	C209Y	Cld						Glew1 x8	
122545	"	C209Z	Cld						Glew1 x 8	

ARIES flight log

Flight: 13209 | Location: Beja Portugal | page 4 of 6

Date: 11/06/06 | Operator(s): Jon S | Resolution: 2 | Gain A: 2 B: 2

Notes:

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
122750	R4.2.	C209ϕ	Osd	70.9	35.2	31.7	-190.6	34.9	CH1 x2	
122904	" "	C2091	open						Z1 x2	
123029	" "	C2092	Osd						Glow1 x 8	
123133	" "	C2093	Osd	71.0	36.7	32.4	-189.6	36.2	CH1 x2	
123352	R4.3 from	C2095	Osd	71.1	36.2	32.9	-189.9	366	CH1 x2	
123507	R4.3	C2096	Osd						Glow1 x 8	
123704	R4-3	C2097.	Osd						Glow1 x 8	
123859	" "	C2098	Osd						Glow1 x 8	
124056	" "	C2099	Osd	71.0	37.8	33.3	-184.9	37.0	CH1 x2	
124209	" "	D209A	open						Z1 x2.	
124329	" "	D209B	Osd	71.0					Glow1 x 8	
124530	" "	D209C	Osd	37.8	38.7	33.8	-190.6	37.3	CH1 x2	
124725	R4.4	D209D	Osd						Glow1 x 8	
124919	" "	D209E	Osd						Glow1 x 8	
125114	" "	D209F	Osd						Glow1 x 8	
125322	" "	D209G	Osd						CH1 x2	
1854									2 x2	Fell over
125510	" "	D209H							Z1 x2	
125628	" "	D209J	Osd	71.1					Glow1 x 6	

ARIES flight log

Flight: B209 | Location: Beja, Portugal CAPEX. | page 5 of 6

Date: 11/6/06 | Operator(s): Jess Kent | Resolution: 2 | Gain A: 2 B: 2

Notes:

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
125216	RH-4	D209K	dsd	70.9	40.1	34.1	+89.9	37.8	CH1 x2	
130009	RH-5	D209L	dsd						Glow1 x 8	
130205	RH-5	D209M	dsd						Glow1x 8	
130401	" "	D209N	dsd						Glow1 x 8	
130601	" "	D209O	dsd	71.0	40.5	34.5	+90.6	38.2	CH1 x2	
130716	" "	D209P	open						Z1 x2	
130833	" "	D209Q	dsd						Glow1 x8	
131034	" "	D209R	dsd						CH1 x2	CBB looks strange
131255	RH-6	D209S	dsd						Glow1 x 8	
131450	" "	D209T	dsd						Glow1 x 8	
131647	" "	D209U	dsd						Glow1 x 8	
131847	" "	D209V	dsd	70.9	40.5	34.7	+89.9	38.6	CH1 x2	
131958	" "	D209W	open						Z1 x2	
132113	" "	D209X	dsd						Glow1 x 8	
132315	" "	D209Y	dsd	70.9	41.5	34.9	+89.9	38.7	CH1 x2	
140922		D209Ø	dsd	70.8	30.9	15.6	+90.6	35.5	CH1 x2	FL240
141047	RS	D2091	dsd						Glow3 x 8	
141249	" "	D2092	dsd						Glow3 x 8	
141450	" "	D2093	dsd						Glow3 x 8	

ARIES flight log

Flight: B209 | Location: Beja, Portugal | page 6 of 6

Date: 11/06/06 | Operator(s): Joss | Resolution: 2 | Gain A: 2 B: 2

Notes:

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
141720	RS-1	D2094	Clsd						~~GW~~ Glew3 x1	
141748	RS-1	D2095	Clsd	70.9	30.7	5.4	-190.6	29.1	CHI x2	
142006	RS-2	D2096	Clsd						Glew3x 8	Fell over - redone
142338	RS-2	D2097	Clsd						Glew3x8	
142421	RS-2	D2098	Open						~~Glew3~~ Z1 x2	
142540	RS-2end	D2099	Clsd	71.1	30.9	0.3	-190.6	24.4	CHI x2	
142745	RS-3	E209A	Clsd						Glew3 x 8	
142925	RS-3	E209B	Clsd						Glew3 x8	
142923	RS-3	E209C	Clsd	70.8	30.6	-4.1	-189.6	24.7	CHI x 2	
143406	RS-4	E209E	Clsd						Glew3 x 8	
143602	RS-4	E209F	Clsd						Glew3x8	
143806	RS-4	E209G	Open						Z1 x2	
143920	RS-4	E209H	Clsd	71.2	30.7	-3.7	-190.6	20.8	CHI x2	
144127	RS-5	E209J	Clsd						Glew3x8	
144323	RS-5	E209K	Clsd						Glew3x8	
144524	RS-5	E209L	Open						Z1x2	
144641	RS-5	E209M	Clsd	71.1	30.8	4.6	-190.6	19.2	CHI x2	

Microwave Radiometers FLIGHT LOG	Date	11/06/06	Flight	B209	log pages	
Operator(s)	JB		Campaign	CAPEX		
Departure	Beja		Arrival	Beja		

System start

MARSS

Visual pod inspection						•
Close 3 SSP circuit breakers						•
Close all MARSS circuit breakers						•
FERA on				at time	07:27	
Temperature controller initial temps	Ch16	18.9°C	Ch 17	18.9°C	Ch18 -20	18.1°C
Temperature controller set points		54°C		58°C		40°C
MARSS CPU on				at time	07:31	
Initial target temperatures	Hot	290.1		Cold	292.1	
Target heating						•
*** CHECK SCAN HEAD CLEAR ***						•
Scanning on (LMD box)				at time	07:33	
Scan indication		Monitor	•		Visual	•

Deimos

Close all Deimos circuit breakers	Not Fitted			
Turn on Deimos CPU				
*** CHECK SCAN HEAD CLEAR ***				
Start Deimos Software			at time	
Initial target temperatures	Hot		Cold	
Target heating				
Scan indication		Monitor		Visual
Weather	Cloud		Precip	
	Surface		Pressure	
	Other			

System functionality check

(after initial system warmup, approx 1 hour)

PC to DRS Time error		$t_{PC}=t_{DRS}$ +	0		at time	09:37:00			
Brightness temps 'sensible'									•
Target temps	MARSS:	Hot	344.48		Cold	305.28			
	Deimos:	Hot			Cold				
Channel gains 'sensible'		Ch1 A (-)	Ch3 A (-)	Ch1 B (-)	Ch3 B (-)				
		Ch16 (40-44)	Ch17 (45-49)	Ch18 (40-44)	Ch19 (40-44)	Ch20 (44-48)			
		43.7	35.4	38.07	40.79	41.43			

Power changeover

Headset on before start		•
Listen to engine start sequence	4, 3, 2, 1.	•
LMD off (3 switches, bottom to top)		•
Exit Deimos Software (x)		
POWER CHANGEOVER		
LMD on (3 switches, top to bottom)	then pushbutton	•
Restart Deimos Software		
System running again	at time	

Flight #	B	Date		Operator(s)		log page	2	of	2

Time	Run id	Alt/FL	*Remarks*	Sys
07:35	**Pre**		LMD on just to check operation, then off until after security. Hopefully then the scan head will not get too warm before take off.	
07:39 **09:28**	**Pre**		LMD off LMD back on, all ok.	
10:31	**R1**		Occasional spike onview 16 outside A/T 23.6C	
11:26			Two spikes, on turn around after last run before missed approach, maybe orientation significance	
12:50			Marssmon restarted, graph not undated since 11:50. Data still logging?	
13:16			Spikes getting much more frequent	
14:28			A spike at 24000ft??? nice and cold!	
15:05:05			Marss pc time:15:05:19	

Wet Nephelometer Log

Flight No **B**209 (Capex Land emissivity) Date 11/6/06 Operator's name: Wilson Page 1 of 4

GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
083000								Pre flight zeros carried out OK.
094930								Take off from Beja
100300		fl050	13.5	26	49		18	Start data logging.
100931	P1	5000ft	12.9	40.3	38.4	→	09	Start P1 → 5000ft over Airfield.
101050				46	37	↗	08	Set water to 35°C
101635	P1/P2	5000ft	15.2	58	69	↗	35	
101830				58	70	↗	35	increase water to 43°C
101940	P2	1500ft	13.9	60	81	-	43	end P2 @ 1500ft
102250			14.0	60	79	↘	43	set water to +15C
102513	R1.1	1700ft	11.9	59.5	68	↘	28	Start R1.1 @ point LE1
103536	R1.1	1700ft	12	4930	46	→	15c	end R1.1 @ LE2. Mainly mineral dust this run.
103702	R1.2	"	12	48	51	↗	17	Start R1.2. Set water to +42C
104731	R1.2	"	12.1	55	81	↪	42	end R1.2 @ point LE4. 30% growth this run. Mineral dust!
104911	R1.3	"	12.1	55	81	↘	42	Start R1.3. Set water to +8c) LE5 → LE6
105957	R1.3		11.9	44	44		+13	end R1.3, Aerosol dried out this run by around 20%.
110133	R2.1	1100ft	12.2	51	45	↗	+14c	Start R2.1. Set water to +42. Ramping up! LE7 → LE8
110800			12.5	50	79	↗	+42	Set water to +44.
111159	R2.1	1100ft	12.2	52	82	→	44	end R2.1. 35% aerosol growth this leg. between 50 & 85% RH,
111326	R2.2	1100ft	12.3	51	78	↘	44.	Start R2.2. LE9 → LE10. Set temp to +14c.
112412	R2.2		12.3	46	46	→	+15	end R2.2 @ LE10. 20% aerosol redy from this run.

Wet Nephelometer Log

Flight No B209 (cafex land emiss) Date 11/06/06 Operator's name: Wilson Page 2 of 4

GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
112542	P3	4000ft	12.0	43	41	→	15	start P3 → 2500ft for approach to Beja.
112704	P3	2500ft	11.7	44	41	→	15	end P3 @ 2500ft.
112800								leave at Low RH for next profile.
113318	P4	2500ft	11.4	40	40	→	15	start P4 → 50ft over Beja runway.
113610	P4/P5	50ft	11.4	41	41	→	15	end P4 @ 50ft. start P5 → FL100
114412	P5	FL100						end P5 @ FL100
114613	R3	-"-						start R3 -
115637	R3	-"-						end R3 -
115803	P6							start P6 → 1100ft
120743	P6	1100ft	12.2	43	36?	→	15	end P6 @ 1100ft
120933	R4.1	1100ft	12.3	44	37	↗	15	start R4.1. bumping temp & humidity up. set water to +43C.
122024	-"-	-"-	13.2	47	79	→	43	end R4.1 @ LE12. RH this run 40-80%. 35% growth seen.
122149	R4.2	-"-	13.1	47	79	↘	43	start R4.2. Set water to +16C. LE13 → 14.
123302	R4.2	1100ft	13.1	43	43	→	15	end R4.2. from 80-40% RH a 10% aerosol reduction was observed.
123451	R4.3	1100ft	13.1	43	43	↗	15	start R4.3 LE14-15. set water to 43C.
124130	"	"	12.3	4389	8943	↗	42	set water to 44. reduce flow to 12.3
124550	4.3		11.6	45	82	→	45	end R4.3 @ LE16. 35% aerosol growth with humidity 40-83%.
124722	4.4	-"-	11.7	45	83	↘	45	start R4.4 LE17-18. set water to +15C.
125000								marked decrease in W:D ratio passing down through 81% RH
								1.45 down to 1.25 at 79% RH and the wet neph.

Wet Nephelometer Log

Flight No **B**209 Date 11/06/06 Operator's name: WILSON Page 3 of 4

GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
125831	R4.4	1100ft	11.5	39	43	→	5C	end R4.4 at LE18.
130006	R4.5	-"-	11.4	40	41	↗	15C	Start R4.5 → LE20. Set water temp to +45C. Aiming for wet neph RH of 85%. Will prob need to adjust flow.
131107	R4.5	1100ft	9.7	43	84	→	45C	End R4.5 @ LE20. RH 40-84% W:D ration of 1.5 @ 84%
131243	R4.6	1100ft	9.8	44	85	↘	45	Start R4.6 → LE22. Set water to +15C.
131400			11.5					set flow to 11.5.
132359	R4.6	1100ft	11.4	37	42	→	15C	end R4.6 @ LE22. CUI reported increase counts this run. Some evidence around 60% humidity on wet neph. Scattering increase at 60% although humidity ramping down.
132519	P7	1100ft						Start P7 → 2500ft for approach to Beja runway
132643	P7	2500ft						end P7
132915		-"-	10.7	37	38	↗	15	Set water to 45C.
133304	P8	2500ft	10.6	36	75	↗	44	Start P8 → 50ft over runway.
133637	P8/P9	50ft	11.2	36	77	→	45C	End P8 @ 50ft, Start P9 → FL240
134350	P9	FL080 ↗	8.9	20	82	→	45C	int P9 @ FL080
134615	P9	080						restart P9
135358	P9	FL160						int P9
135806	P9	FL160						restart P9
140459	P9	FL240						end P9 @ FL240

Wet Nephelometer Log

Flight No **B**209 Date 11/06/06 Operator's name: Wilson Page 4 of 4

GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
141234	–	FL240						Sonde 1 gone.
141256	R5	FL240	14.9	0	78	–	45	Start R5. Nothing much up here for wet neph.
141800								Stop data for wet neph.
141821	R5	FL240						end run.

SWS and SHIMS FLIGHT LOG SHEET

Flight #	B209	Date	11/06/06	Operator(s)	Ian Rule	log page	1 of 2

Note to operator: Indicate whether entry refers to SWS or SHIMS

Time	Run id	Alt/FL	Mirr Pos	Int Times		Remarks	SWS	USH	LSH
				Vis	NIR				
0733						Set laptop time = DRS			
0734		0	shims	50	200	Shims running, clear above		x	
0923						Shims stopped logging			
						video – recorder u/s			
095836						Take off Beja			
1006				30	200	Shims running ok		x	
1007			Nad - 6	100	200	Sws running ok			
100932	P1	5000’		100	200	Start profile	x		
101637	P2	50’ agl				End profile, start next			
101940		1500’				End profile			
102513	R1.1	1700’ qnh	Nad - 6	100	200	Start run			
103537						End run			
103703	R1.2	1700’ qnh	Nad - 6	100	200	Start run			
104731						End run			
104911	R1.3	1700’ qnh	Nad - 6	100	200	Start run, sws nir module dropped out part through run, reset at end of run			
1050			shims	30	200	Shims ok			
105957						End run			
110133	R2.1	1100’ qnh	Nad - 6	100	200	Start run, sws u/s			
111159						End run			
111326	R2.2	1100’ qnh	Nad - 6	100	200	Start run, sws ok now			
112412						End run			
112542	P3	1100’ qnh				Start profile			
112704		2500’ qnh				End profile			
113318	P4	2500’ qnh	Nad - 6	100	200	Start profile, sws vis u/s	x		
113610	P5	50’ agl	shims	30	200	End profile, start next, sws vis still u/s		x	
114412		FL080				End profile, only sws nir working, shims ok			
114639	R3	FL80	Nad - 6	100	200	Start run, sws vis u/s			
1155						Sws vis module back			
115637						End run			
115803	P6	FL80	Nad - 6	100	200	Start profile	x		
			shims	30	200			x	
120743						End profile			
120933	R4.1	1100’ qnh	Nad - 6	100	200	Start run	x		
122024						End run			
122149	R4.2	1100’ qnh	Nad - 6	100	200	Start run			
123302						End run			
123451	R4.3	1100’ qnh	Nad - 6	100	200	Start run	x		

SWS and SHIMS FLIGHT LOG SHEET

Flight #	B209	Date	11/06/06	Operator(s)	Ian Rule	log page	2 of 2

Note to operator: Indicate whether entry refers to SWS or SHIMS

Time	Run id	Alt/FL	Mirr Pos	Int Times		Remarks	SWS	USH	LSH
				Vis	NIR				
124550						End run			
124722	R4.4	1100' qnh	Nad - 6	100	200	Start run, sws vis dropped out near end – bit intermittant	x		
125831						End run			
130006	R4.5	1100' qnh	Nad - 6	100	200	Start run, sws vis behaving oddly, coming in and out			
131107						End run			
131243	R4.6	1100' qnh	Nad - 6	100	200	Start run			
132359						End run			
132519	P7	1100' qnh				Start profile			
132643		2500' qnh				End profile			
133304	P8	2500' qnh				Start profile			
133637	P9	50' agl				End profile start profile, sws vis dropped out again			
1338			Nad - 6	100	200	Sws zero			
1338			shims	30	200	Shims zero			
1339						Sws vis back ok			
140459		FL240				End profile			
141115	R5.1	FL240	Nad - 6	100	200	Start run			
141821						End run			
142001	R5.2	FL240	Nad - 6	100	200	Start run			
142334			Zen + 6	200	500				
1425						End run			
142644	R5.3	FL240	55 deg aft	200	500	Start run, into sun			
142814			50 deg aft	200	500				
143008			45 deg aft	200	500				
143145						End run			
143404	R5.4	FL240	50 deg fwd	200	500	Start run down sun			
143543			45 deg fwd						
143723			40 deg fwd						
143904						End run			
144124	R5.5	FL240	55 deg aft	200	500	Start run into sun			
144304			50 deg aft						
144436			45 deg aft						
144623						End run, end science, instruments off			
145736						Land Beja			

Flight Manager's Instrument Status Log

Flight No. **B** 209 Date: 11th June 2006

Instrument	Operated	Instrument	Operated
Navigation		**Cloud Physics**	
INU	**Y**	**Probes**	
XR5M GPS	**Y**	FFSSP	**Y**
Cruciform GPS	**Y**	PCASP	**Y**
Satcom C	**Y**	2D-P	**Y**
Satcom H	**Y**	2D-C	Y
Thermometers		Cloudscope	**N**
De-Iced Temp	**Y**	SID 1	**Y**
Non De-Iced	**Y**	SID 2	**Y**
Heimann	**Y**	HVPS	**N**
Hygrometers		CIP25	**Y**
G. Eastern	**Y**	CIP100	**N**
J. Williams	**Y**		
Nevzorov	**Y**		
TWC	**N**	**Racks:**	
FWVS	**N**	INC	**N**
Radiometers		CCN / CPC	**Y**
Upper Clear	**Y**	CVI (incl PCASP)	**Y**
" Red	**Y**		
" Silicon	**Y**		
" SHIMS	**Y**	**Aerosol**	
Lower Clear	Y	PSAP	**Y**
" Red	**Y**	Nephelometer	**Y**
" Silicon	**Y**	Filters	**Y**
		AMS	**N**
Large Radiometers			
IR Camera	**N**		
TAFTS	**N**	**Others:**	
MARSS	**Y**	AVAPS	**N**
DEIMOS	**N**	IR Camera	**N**
ARIES	**Y**	NIR TDLAS	N
SWS	Y	2BT O3	N
Chemistry		VACC	N
Ozone	Y	PEROXIDE	N
SO2	N	Formaldehyde	N
NOX	Y	ADA	N
CO	Y	CPI	N
ORAC	N	Noxy	N
PAN	N	PTRMS	N
PERCA	N	Bag Sampling	N

Faults / Incidents Log

Flight No. B209
Date: 11th June 2006

Instruments

1. Core Chem - no NO2 and NOx above FL150 as yesterday. Also, CO levels too high (above FL150) as on previous flight.

2. SWS – both modules dropped out at 1103Z, possibly due to the turbulence? Working again from 1111Z. Lost Visible module during P5, got it back by start P6.

3. PCASP – Reference voltage dropped to zero at 1109Z, possible loose connection to laser. Came back on at 1204 i.e. after climbing to FL80, but only for 10minutes. Then okay again at FL240.

4. CCN – Fell over at 1209. Will adjust potentiometer when we go back up above the turbulence.

5. Satcom C – turnaround message successful but all position reports just being queued but not sent. Tried resubmitting them, didn't work. Sent text message successfully. Stopped and started h_satcom then okay. Resubmitted earlier position reports.

6. Satcom H – no dial tone on aircraft handsets

7. FFC and UFC – lots of insects impacted on window. Will need to be cleaned before next flight.

Aircraft

Satcom Calls

MISSING LOG SHEETS:

The following log sheets are not available for flight B209:

Log	Reason
Cloud Physics Processing	Awaiting completion of post flight processing
CVI	No log is ever taken for CVI

VIDEO RECORDINGS:

3 x Upward Facing Cameras
3 x Downward Facing Cameras

Digital8 video recordings from this flight reside with :

Dave Kindred

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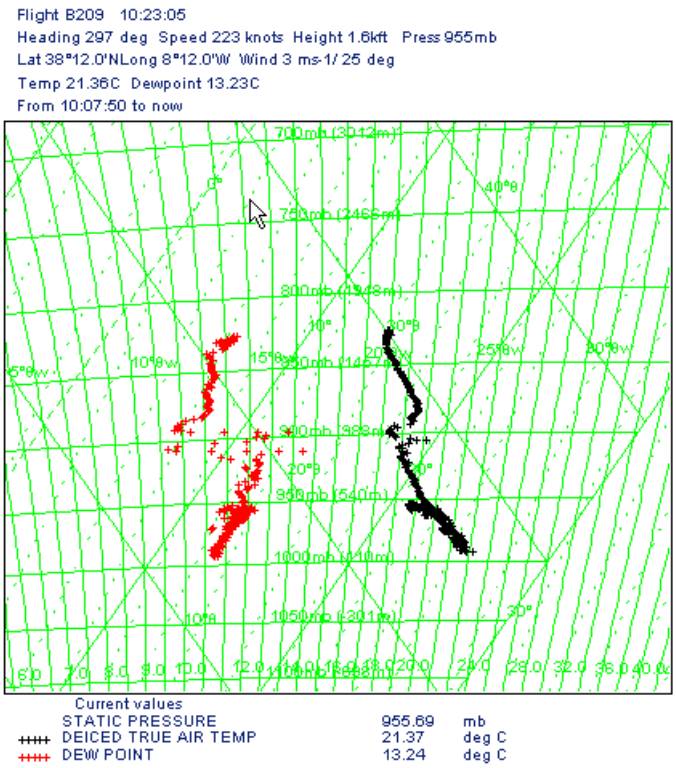
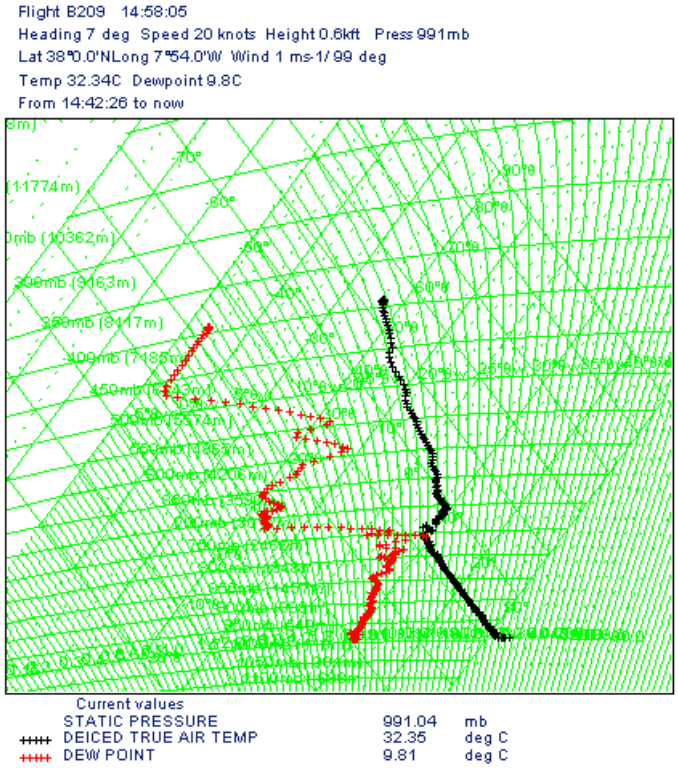
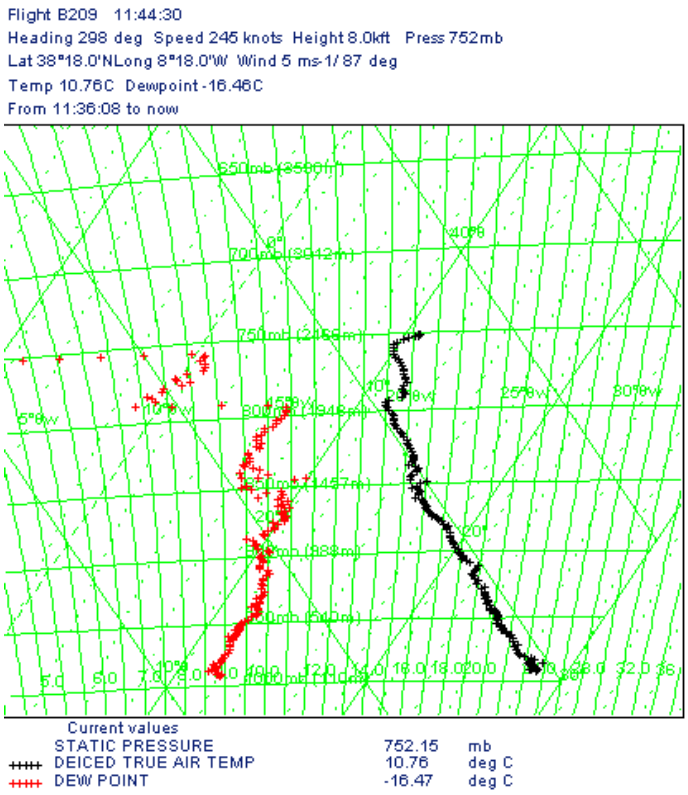


B209 Profiles 1&2 Tephi



B209 Final Approach Tephi



B209 Profile 5 Tephi